JOHNS HOPKINS HOSPITAL.

REPORTS AND PAPERS

RELATING TO

CONSTRUCTION AND ORGANIZATION.

No. 3.

WASHINGTON, D. C., Jan. 11th, 1877.

MR. FRANCIS T. KING,

President of the Johns Hopkins Hospital:

DEAR SIR:

I have the honor to inform you that since the publication of my Report No. 2, with sketch plans for the Johns Hopkins Hospital, I have continued my studies of the subject with the following results.

Having obtained a leave of absence for three months, I sailed from Boston, Oct. 7th, 1876, landed at Queenstown, Oct. 16th, and re-embarked at Liverpool for New York, Dec. 16th, having in the interval visited Dublin, London, Oxford, Cambridge, Leeds, Liverpool, Manchester, Edinburgh, Glasgow, Amsterdam, Bonn, Leipzig, Berlin, Dresden, Vienna, Venice, Verona, Milan and Paris, and having at these points examined Hospitals and Medical Schools, so far as the limited time at my disposal would permit.

I endeavored to meet and confer with those who have given the most attention to the subject of Hospital Con-

struction and Organization, showing them the sketch plans, and obtaining their opinions and criticisms as far as possible, and was accompanied throughout the journey by Dr. E. M. Hunt, President of the section of Public Hygiene of the American Medical Association, who gave me the benefit of his observations on the same subjects as viewed from an independent stand-point.

I do not propose here to go into any details as to the Hospitals and Medical Schools which I visited, or to specify individual opinions, but will briefly state the general results.

I am glad to be able to report that the method of connecting the Hospital with the Medical Department of the University, and the objects and character of the Medical School as suggested in my first Report seem to meet with general, and for the most part, unqualified approval on the part of those, both in this country and in Europe, who have given most attention to, and had most practical experience in, the subject of medical education.

A few American Physicians, however, doubt whether there are a sufficient number of Medical students in the United States, possessed of the requisite preliminary education, and who will be willing to devote four years to Medical studies, to warrant the course proposed, but they say that the experiment is worth trying at all events.

On the other hand some of the German Physicians, as for instance Prof. Thiersch, Dean of the Medical Faculty of the University of Leipzig, think that the course of study for the Physician should be at least six years as in Sweden, or in the new school at Geneva, taking the ground that the graduate in medicine should know all the resources of his art. It does not seem to me, however, that the purpose of an educational institution is to turn out perfect scholars, so much as it is to fit men to go on studying and investigating for the rest of their lives. I consider it very desirable for instance, that a man intending to be a first class Physician should learn enough of

the art of drawing to be able to sketch distinctly any peculiarity of form of the body or its organs, in part because it also trains him to observe closely, in part because it is a powerful aid to his memory and as a means of explanation, but I do not think it necessary that he shall be qualified to lecture *ex cathedra*, and without previous preparation, upon any medical subject selected at random, in the style that would be expected of a Professor.

For the purposes of a person beginning his medical studies it seemed to me that the English schools were superior. Of these the largest, and by many considered the best, is that of Edinburgh, and its superiority seems in a great degree to be due to the peculiar system of what are called extra mural lectures which prevails there. Any man who can pass a moderately severe examination can lecture on any subject in the medical curriculum that he chooses, and his certificate that the student has attended his lectures is of equal value before the examining board with that of the professor. The details of the arrangement and of the method of testing the fitness of candidates merit careful examination. I can only here state the result, which is, that the professor is constantly stimulated to do his best, and cannot fall into a rut without suffering from the competition of his extra mural rivals over whom he has some advantages, but by no means enough to enable him to rely solely on them to retain his pupils.

In the larger Medical Schools of France and Germany, the best results can only be obtained by those who go there with a very considerable stock of preliminary knowledge.

In the German Schools there seems to me to be a little too much of the forcing process in the stimulating to and requiring of original work, instead of trying to fit a man to do original work.

The student is led to think that his highest aim should be to do some experiment which no one has done before, and for this purpose he may work for a year in the laboratory,

and yet acquire but a tithe of the knowledge which he goes there to obtain. As a rule it seems better that specialism should follow and not precede general culture; if the foundation is narrow the superstructure cannot be wide or firm.

With regard to the general plan of the Hospital, I can only say, that it is approved by the majority of the experts to whom I submitted it. I do not think we have much to learn from Europe as regards the general principles of Hospital construction and management, or as regards methods of heating and ventilation, in fact these things cannot be said as yet to be settled on any scientific basis of observed facts, and there are nearly as many opinions as persons. I found for instance, distinguished professors who preferred the old fashioned corridor plan to that of wards with opposite windows, who thought that there might be too much ventilation, putting draughts out of the question, and who spoke of a "stuffy atmosphere as a good thing for certain cases." Surprise was freely expressed at my coming from America to Europe to learn about Hospitals.

The general tendency in the most recent Hospitals is, however, towards one story wards, especially for surgical and obstetrical cases, or those for which the best possible surroundings are desired, and towards separation and isolation of the several buildings.

Thus in the new City Hospital, "Friedrichshain," at Berlin, the plans of which were prepared in accordance with the advice of Professor Virchow, there are six two story pavilions, four one story, and two for isolating purposes, with an administration building, a kitchen and laundry building, a pathological building, a bath house and a nurses' home, and all these buildings are entirely isolated from each other, without any connecting corridors whatever, being scattered over a lot about 900 by 1200 feet, and containing 23½ acres.

I present herewith a copy of a description of this Hospital, with detailed plans and drawings of all its parts, by the architects M. M. Gropius and Schmieden, which merits careful examination, and also a set of plans of the new Military Hospital at Templehof, Berlin, by the same architects.

I did not find it possible to obtain positive reliable data as to the effects of various plans of Hospital construction or ventilation. As a rule each person thought that the system with which he was most familiar was the best, although in a few instances the reverse of this was the case, but when I attempted to go behind the dogmatic assertions and find out upon what they were founded the result was negative. Mortality statistics are of no use for this purpose, since the character of the patients received varies so much. I tried at first to get the statistics of certain classes of cases, such as compound fractures and dislocation, and outbreaks of erysipelas and septicaemia, but I was soon convinced that these depend far more on the methods of treatment, and especially on care in the use of disinfectants and antiseptics, and in the preservation of cleanliness, than in the construction of the wards, and that where what is known as Lister's method is regularly and properly employed in a Hospital, its healthfulness cannot at all be estimated by statistics of the class of cases above referred to. Indeed, I came back more thoroughly impressed and convinced than ever, that the thing of prime importance in a Hospital is minute care of, and cleanliness in every part and person about it, and in the management and supervision which will ensure this, while without it the most perfect Hospital that can be built soon deteriorates and gives only second or third rate results.

It was very interesting to observe how in some of the older Hospitals, such as the Rotunda in Dublin, Guy's and St. Bartholomew's in London, the City Hospitals at Bonn, and in part of the Charité at Berlin, the defects of construction and plan were compensated for by the mode

of management, while on the other hand in Hospitals admitted to be much superior in plan, such as the Lariboisère, St. Thomas, and the Herbert, it having been apparently taken for granted that they were so perfect that it did not matter how they were managed, the evil results are plainly visible in the appearance of the buildings, or in the Hospital diseases which have from time to time prevailed in them. Setting aside however the source of fallacy arising from difference in modes of management, it is extremely difficult, and in the limited time at my disposal, it was impossible to obtain more than the most vague and general statements, as to the relative merits of the different Hospitals.

The English Hospitals which I saw may be divided into two classes, 1st. Those supported by large endowments, mostly of ancient date, such as Guy's, St. Thomas' and St. Bartholomew's. These are close corporations with a great number of theoretical governors—but really managed by two or three persons who are never medical men, and from whom very little information is to be had.

The second class are supported by annual subscriptions which can be obtained in England more easily than in any country under the sun, and for almost any object which can be proposed. The subscribers are usually entitled to vote, whence it happens that in case of a dispute, a wealthy person interested can make his footmen, boot-blacks, etc., subscribers and governors, and thus get votes enough to carry his point.

Under the present organization of the Local Government Board in England, it is possible that if an Hospital become notoriously unhealthy—an inspection of it by a competent medical officer may be made, but these reports must be kept secret and confidential, at the will of the Trustees or Governors. * * * *

I have said above that the sketch plan of this Hospital is approved by the majority of those who have seen it, and I was able to meet and confer with those in England

and Germany who have given most attention to this subject.

Some however, think that the buildings are spread over too great a space, thus increasing the labor and cost of administration. This objection has weight and should be fairly considered, to avoid it, it would be necessary either to give up the central garden, and have the pavilions radiate from one corridor as in the Herbert—or to use two stories of wards, or to combine these plans. It is not possible to say how much healthier one story wards are, than those of two or more, or how much better results will be obtained by having the wards separated, and giving to each the greatest possible air space The general opinion is that these one story isolated wards are the best of all, but I cannot learn what increased percentage of recoveries they will insure.

All arguments from statistics as to the healthfulness of two and three story Pavilion Hospitals are equally good for the old fashioned convent or corridor plan. The records for instance of the old Pennsylvania Hospital for the last ten years, show results not much if any inferior to those of the Pavilion Episcopal Hospital for the same period. Nevertheless it is almost unanimously agreed that there is danger in the old fashioned compact style of building, that while with care it may go on for a long time with good results, yet that there is always danger of epidemics of hospitalism, and that when these do occur, it is almost impossible to control them. Much the same feeling seems to have grown up with regard to one story versus two story wards—the usual statement being that patients certainly do as well in one story buildings, and may do better—that the one story buildings are easier to ventilate, especially in summer, that if any local cause of disease occurs in a ward its effects are limited to that ward, and that the benefit of all doubts therefore, ought to be given to the one story plan.

In deciding the question, several things, which I shall hereafter refer to, should be considered, as well as the matter of cost, the importance of which I am by no means inclined to under-estimate, but now I will only say, that after careful reflection, I advise the Trustees to adhere to the principle of the central garden, and to the one story pavilion, with the exception of the two nearest the administrative building which may be two stories, while advantage be taken of the space thus gained, to obtain more room on the Broadway front, and elevation for the buildings.

With reference to the details of the individual wards the plan most approved is that in No. 1, Plate II.

Very strong doubts are expressed by many however, as to the desirability of keeping all the service rooms at the north end, and a few are very urgent that the nurse shall have a separate room connected with the ward. These remarks apply especially to the male wards in connection with the employment of female nurses, and they are specially urged by some of the most prominent of the female nurses themselves.

In previous reports, I have refrained from alluding to the subject of female nurses, to the organization of the training school or to the relations which it should have to the Hospital, because I had not sufficient information to feel authorized to advise on the subject. I have inquired carefully as to the working of the nursing systems in the several Hospitals which I visited, and in addition to what has been published on the subject, which is almost exclusively by those favorable to what is known as the Nightingale system, I have also consulted the opinions of those most experienced in Hospital management, which opinions are by no means as favorable as I had anticipated, and are unanimous in the statement that one of the most difficult problems in connection with this Hospital will be the organization of its system of nurses if anything like the Nightingale plan is to be adopted.

As the time has now come when some decision must be made as to the scope and character of the training school, and the kind of nurses we should endeavor to obtain and provide for, I will briefly state the opinions I have formed.

As I understand the intention of the Founder and the opinions of the Trustees, this training school is not to be put in the hands of any religious order, and I therefore exclude all such from consideration.

Miss Nightingale's views as to female nurses, and their amplification and exposition by Mrs. Wardroper and Miss Lees—and by publications of the Bellevue Hospital training school are well known.

By this school, it is held that female nurses should be as far as possible, refined, educated women, fitted to move in good society—who should be thoroughly trained in everything pertaining to the management of the sick—from the washing of bed-pans, to the regulation of temperature and ventilation, and the noting of symptoms for the physician—who shall be good cooks and seamstresses—gentlewomen also, thoroughly kind-hearted, yet with firmness and decision, and power of control of unruly patients. They should know as much as the Surgeon about the dressing of wounds, and as much as the Physician about the meaning of symptoms—yet they must have no tendency to become medical women, or to set up their own opinions in practice. They must, of course, be of unspotted morals and chastity.

It is acknowledged, that to secure and retain such women is difficult—and that to do it, the accommodations and arrangements must be of a special kind. It is insisted, that women of this kind, must not be subordinate to any man—that it is only a woman who can understand and manage them—that the Superintendent of the female nurses should be the sole head of all the women employed in the Hospital—and that she should not herself be subordinate to the Superintendent of the Hospital, but should report only to the board of Trustees, nay, logically the

conclusion is, that the board of trustees itself should be composed partly of women, in order to carry out the principle, that no woman shall be subordinate to a man.

Upon these views, I would remark that I do not believe it is possible to obtain such women for nurses, except from religious motives, that the great majority of the nurses in the St. Thomas Hospital, are not of this character, but are of the class from which the better kind of English domestic servants are obtained, that the denunciations of attempts to govern women by men are not worth considering, except as indicating that those who utter them, are not desirable persons to be associated with in an institution of this kind, and that I think that the experience as to female nurses of European Hospitals or training schools, or the opinions of those connected with such schools, are not of much value to us here in Baltimore, since the circumstances are so different, and the class of women whom we may expect to induce to enter and remain as nurses, is so unlike the class from which European Hospitals are supplied, that failure will probably be the result of attempting to transplant their methods here.

The opinions of those connected with the training school for nurses at New Haven, appear to me much more worthy of consideration Instead of attempting to establish an independent female hierarchy, which will consider from the very commencement, that one of its main objects is to endeavor to be independent of all males, who are to be considered as the natural enemies of the organization, I find in the New Haven Hospital, a superintendent of the female nurses, who devotes her time and attention to teaching the women how to nurse—and a matron who is the housekeeper of the establishment, each of these attending to her own department, and reporting to the authorities of the Hospital. The establishment at New Haven is but a small one, but the same principle will apply in this Hospital. The superintendent of the training school will have plenty to do to attend to that, if she does it properly,

and I can see no possible good in having her also attempt to supervise the kitchen, the laundry, etc.

The accommodations provided in the building for the nurses, are in my judgment ample and of a very superior quality, and I do not recommend any change in this respect.

I do not think it wise, that it shall be insisted on that women alone shall do the nursing and cleansing about a ward. As a rule, I agree with the general opinion that women are better nurses than men, but two or three of the best nurses I ever saw were males, and for some cases all physicians would strongly prefer such to any woman. A really well trained first class male nurse can always find employment, but there are very few such, and in this country there is no place where they can be trained. If the right sort of material presents itself, I think it will be worth while for the authorities of this Hospital, to try the experiment of training a few, say half a dozen male nurses, for whom I am sure there will be no lack of employment. One great difficulty with both male and female nurses, is that if of a superior class, they wish to become doctors and doctresses.

As I understand the duties of a female nurse, they lie mainly in the ward itself, that is her room, the absence of which is by some complained of, and her place for rest while on duty is in the middle of it.

If a female nurse is a properly organized and healthy woman, she will certainly at times be subject to strong temptation under which occasionally one will fall, and this occurs in all hospitals where women are employed, without any exception whatever. Something may be done however, to remove opportunities—and I believe the construction proposed effects this as far as it is worth while to attempt it.

Into the details of some changes proposed in the Service building, I will not here enter, but will pass on to

the vexed question of heating and ventilation, which formed one of the main subjects of my inquiries abroad.

Upon this also I am sorry to say, that I was able to obtain but little positive information that will be of use to us, although there, as here, dogmatically expressed opinions, for which the authors could give no good reasons, are abundant.

It would be useless to repeat these, but I think that the Trustees should be informed that the principal authorities whom I consulted prefer systems of aspiration to those of impulsion, but that the general opinion is that although it is possible to effect the ventilation of this Hospital by means of one great aspirating chimney, the practical difficulties in the way of adjustment will be so great, that it is not proper to attempt it. There is a general feeling of timidity about attempting to use large and powerful but complex systems, and a tendency to heat and ventilate each building by itself, which is in fact to give up the problem of concentration and simplification as insoluble.

The data obtainable from English hospitals are of little use in this country, owing to the marked difference in climate. As a general rule, the wards are insufficiently heated in England—and various methods are being tried to supplement the open fire-places which are not satisfactory, and yet whose efficacy it is considered almost criminal to doubt. In the latest and best of the German hospitals, the principle has been adopted of making the heating and ventilation of each building independent of every other. The results as I have observed, were good, but the arrangements are complicated, and require careful superintendence. I saw but one case in which the fan or impulsion system was used with good results, and that was at the Grand Opera House in Vienna.

It is my opinion, that those who condemn the fan, do so from want of experience of the proper kinds of fans and ducts, the failures usually arising from insufficient size,

and that the results which have been obtained from its use in the large hospitals for the insane in the United States, are such as to warrant the statement that for at least half the year it is the better and cheaper mode of ventilation.

Nevertheless, the weight of authority is on the side of making the ventilation of each building separate and distinct, and we have to consider how this can be best accomplished. Although there is no instance in which the heating of so extended a group of buildings has been effected by hot water from one point as distant as is the kitchen in this case, yet as I am assured by your Architect, and by other Engineers entitled to be considered as experts, that it can easily be done, I recommend that this Hospital shall be heated by hot water coils, placed in the basements of the several buildings, and supplied from boilers placed in the basement of the kitchen building, as shown in sketch plans. I prefer hot water to steam as a means of Hospital heating, because it gives heating surfaces of a lower temperature, which temperature is readily controlled, because it makes less noise, and demands less constant care in firing, and because I believe it is less costly for management and repairs than steam.

We can best make the ventilation of each ward separate and distinct, by giving it in addition to valved ridge openings, an aspirating chimney which shall rise about 30 feet above the level of the ceiling of the ward, and into which shall empty a duct running longitudinally beneath the centre of the floors of the ward, or by placing two double fire-places in the centre of the ward, which fire-places will give plenty of ventilation, but very little heat.

If the aspirating chimney for each ward be used, the question is as to the best means of furnishing the heat to drive it. It may be done by a steam coil, supplied by a central boiler, by a fire at the base, by a steam jet, or by gas jets. I think that of these the gas or steam jets, would

be extremely expensive, that the fire at the base would be the most certain, and that the steam coil, if it would do the work economically, would be much the most convenient.

I find so much diversity of opinion among engineers, as to the best means of effecting the desired rarefaction of the air in such a chimney, that I can make no positive recommendation—the question is one that is within the province of your Architect, rather than of your medical adviser, and still further inquiry, and perhaps experiment will be required before a decision can be judiciously made.

What we require, is that the apparatus for each of the Common Pavilions and Pay Wards, shall be competent to introduce, thoroughly distribute and remove air in each ward, at the rate of one cubic foot per second per bed—and in the service rooms at the rate of half cubic foot per second per patient. For the isolating wards, the apparatus must have capacity for double this amount. We must have the means of heating this air from 0° to 75° F., and to secure the distribution above referred to, the outgoing air must be taken from near the level of the floor during cold weather.

The dangerous thing in a hospital ward is not a gas, but dust—an excessively fine organic dust.

The work above described, must be done without producing draughts or currents that will be so perceptible as to cause discomfort, and it must be done in still warm days as well as in cold windy ones.

Taking these requirements, it is the business of the Engineer to meet them in the cheapest way, and in this word "cheapest," lies his difficulty.

Whatever may be the plan of ventilation adopted, the ventilation for each of the isolating wards, pay wards, nurses' home and buildings connected with the administration should be separate and distinct.

With reference to each of these last mentioned buildings, the sketch plans submitted are generally approved,

and I shall recommend their adoption with some minor changes in detail, such as the removal of the disinfecting oven to a small separate building, etc.

I paid especial attention to the arrangement of foreign dispensaries for the treatment of out-door cases, the largest of which is at St. Bartholomew's in London, where the daily attendance is from 600 to 1000 patients.

I soon became convinced that the general waiting room should be high, light and thoroughly ventilated, and that the whole dispensary should be a building of one story only, giving facilities for roof light and ventilation. This conclusion had previously been reached by your architect, and I submit herewith plans prepared by him for such a building, which I recommend shall be approved.

I find that in Europe and especially in England, convalescent hospitals as distinguished from convalescent wards are coming more and more into use, and those hospitals and infirmaries which cannot afford to support separate institutions of this kind, usually manage to pay for a few beds in independent convalescent institutions. Many of these convalescent hospitals are kept open only during warm weather, and their arrangement may therefore be very simple and cheap.

Some however are planned for occupation in cold weather, such as that connected with the Royal Infirmary at Manchester—which has an enclosed winter garden with glass roof, and is in many ways specially worthy of commendation.

Glasgow has two convalescent establishments, one on the sea shore and one in the highlands, which permits a choice by the physicians to suit the needs of the patients.

The sexes are not separated in such institutions, nor is it considered desirable that they should be.

The greatest difficulty in their management, is to prevent them from being filled up with chronic and incurable cases, and we shall find this to occur also in Baltimore.

The time has now come when a final decision should be made as to the general plan of the Hospital, since owing to the peculiar contour of the surface of the lot it is desirable that the work of grading and laying foundations should go on together, and if this work is to be commenced this spring, your architect should commence the detailed and working drawings as soon as possible, to have them ready by the time they will be needed.

The responsibility of recommending one particular plan for your Hospital, to the exclusion of all others, I feel to be very great. The whole subject of hospital construction and ventilation is at present in a revolutionary condition,—with almost every existing hospital there is more or less dissatisfaction, while from the most recent attempts to produce a perfect structure, the results are not yet known, and it is utterly impossible to present a plan which will not be strongly objected to by some of those considered as authorities on this subject.

In the University organization you can proceed gradually and tentatively, getting the most important thing, namely the brains, first, and leaving the buildings to be the natural outgrowth of your necessities, but for the Hospital the buildings must, to a considerable extent at least, be first decided on. It is desirable that the foundations of all the buildings on the west front be laid before grading is commenced, in order to avoid excavations in the newly deposited earth. These buildings in the plan proposed are the largest and most costly of the Hospital, and after their plans are thus fixed, but little variation is possible in the rest of the institution.

In recommending to the Trustees, as I now do, that the sketch plans which I lay before them be approved, and that authority be granted to direct the architect to proceed with his working drawings in accordance with them, which drawings as to details are to be subject to the approval of the Building Committee, I am influenced by the following considerations.

1st. Will the sick in these wards be placed in the best possible conditions as to light, pure air, warmth, etc., so that there shall be nothing in the surroundings to hinder their recovery? The answer to this is yes, and it may be considered as unanimous, for the advocates of other plans do not claim that their plans are better as regards the sick, but that they are as good.

2nd. So far as the medical department of the University is concerned, and as giving the necessary facilities for the education of physicians, and for advancing our knowledge of disease, are these plans satisfactory? The answer is yes, and is I believe unanimous.

3rd. So far as the training of nurses is concerned, are these plans suited to induce the class of women whom it is desired to secure—to enter and remain in this Hospital? To this also, the answer is in the main, affirmative, although doubts are expressed by some.

4th. Are the plans practicable, and to be approved from the point of view of the Architect and Engineer? The answer is yes.

5th. Can as good results be obtained by some other plan which shall cost much less in construction, or in administration, or in both, or if the results may perhaps be not quite so good, cannot relief be afforded to a greater number of people with the same expenditure? In other words, taking all things together, cannot the money be better employed in building a cheaper Hospital, which shall also be more compact and cheaper to manage, and which if not certainly as good in the hygenic, educational or architectural point of view, will yet afford a sufficiently good care to a larger number of persons.

Upon this question there are great differences of opinion. Some hold that the expenditure upon the buildings of an hospital should never exceed $1000.00 per bed, and that the cost of administering it should never exceed $1.00 per day per patient, while others say that the best possible results should be aimed at regardless of the cost.

As I have above stated, I feel warranted in saying to the Trustees, that the plan submitted is from the point of view of the physician, the hygienist, the architect, the educator, and the investigator, in all respects, as good as, and in some better, than that of any Hospital now in existence, or which has been proposed.

I must also say that constructed as your Architect proposes to construct it, it will be a solid and substantial group of buildings, and a comparatively costly one.

It will also be more expensive to manage than the great majority of Hospitals of its size in existence, but it will accomplish more.

If I supposed that the number of sick poor in the City of Baltimore in urgent need of the aid of this charity was in excess of the number who can be provided for in this plan, I should advise such an amount of change and consolidation, as would admit of doing the greatest good to the greatest number.

As I have no reason to think this, or that even 300 beds would not at the present time be sufficient to meet the demands upon this charity, I advise the adoption of the plan presented, but I recognize fully that this is not a medical, architectural or scientific question, but one of finance, which belongs peculiarly to the Trustees to determine, and the decision of which—whatever it may be, will be unsatisfactory to a certain number of outside parties. The question of cost in this case means, first, the time when the Hospital shall be opened to patients; second, the number to be cared for. I base my recommendation upon the belief, that in this particular case, it is best for the sake of the sick, of the school, and of suffering humanity throughout the world, to try to give to what patients we do receive, the very best possible facilities for treatment which modern science can suggest, and that the result cannot fail to be a valuable one.

I do not, and cannot say that the plan I have recommended is the best possible plan, but I believe it complies

with the direction of the Founder, that "it shall provide for an Hospital, which shall in construction and arrangement, compare favorably with any other institution of like character in this country or in Europe." Certainly I have seen nothing which I think superior, or in some respects equal to it, and if it has a medical, surgical and nursing staff, and a superintendence of corresponding quality, I am quite sure that the results of treatment obtained in it will not be surpassed elsewhere.

Very respectfully,

Your obedient servant,

JOHN S. BILLINGS,

Surgeon U. S. Army.